Ruben Specogna

List of Publications by Year
in descending order

143 papers	1,076 citations	471509 17 h-index	552781 26 g-index
144 all docs	144 docs citations	144 times ranked	531 citing authors

#	Article	IF	Citations
1	Foundations of volume integral methods for eddy current problems. Computer Methods in Applied Mechanics and Engineering, 2022, 392, 114626.	6.6	6
2	Fast Computation of Eddy Currents for Multiple Conductors. IEEE Transactions on Magnetics, 2022, 58, 1-4.	2.1	2
3	Design Optimization of PCB-Based Rotary-Inductive Position Sensors. Sensors, 2022, 22, 4683.	3.8	6
4	Inverting the discrete curl operator: A novel graph algorithm to find a vector potential of a given vector field. Journal of Computational Physics, 2022, 466, 111404.	3.8	1
5	Modelling and design of FTJs as high reading-impedance synaptic devices. , 2021, , .		5
6	Explicit geometric construction of sparse inverse mass matrices for arbitrary tetrahedral grids. Computer Methods in Applied Mechanics and Engineering, 2021, 377, 113699.	6.6	2
7	Detailed Circuit Modelling of phone charging wireless power transfer. , 2021, , .		1
8	New Magic Formula Demonstration Shows Unexpected Features of Geometrically Defined Matrices for Polyhedral Grids. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
9	Interaction of Tearing Modes With Passive Structures in a Tokamak. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
10	Error Fieldsâ€™ Computation in the RFX-mod2 Reversed Field Pinch. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	0
11	Mirror Symmetry in Integral Formulations for Eddy Currents. IEEE Transactions on Magnetics, 2021, 57, 1-4.	2.1	1
12	The role of the dual grid in low-order compatible numerical schemes on general meshes. Journal of Computational Physics, 2021, 436, 110285.	3.8	3
13	Optimized cycle basis in volume integral formulations for large scale eddy-current problems. Computer Physics Communications, 2021, 265, 108004.	7.5	14
14	Modeling and Design of FTJs as Multi-Level Low Energy Memristors for Neuromorphic Computing. IEEE Journal of the Electron Devices Society, 2021, 9, 1202-1209.	2.1	12
15	Fast Iterative Schemes for the Solution of Eddy-Current Problems Featuring Multiple Conductors by Integral Formulations. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	2
16	Cyclic Symmetry in Volume Integral Formulations for Eddy Currents: Cohomology Computation and Gauging. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	3
17	Diagonal Material Matrices for Arbitrary Simplicial Meshes for Solving Poisson Problems With One Unknown Per Element. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	1
18	Stabilization of negative capacitance in ferroelectric capacitors with and without a metal interlayer. Nanoscale, 2020, 12, 6121-6129.	5.6	34

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19	The Time-Domain Cell Method Is a Coupling of Two Explicit Discontinuous Galerkin Schemes With Continuous Fluxes. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	4
20	A Novel Mixed-Hybrid Formulation for Magnetostatics. IEEE Transactions on Magnetics, 2020, 56, 1-4.	2.1	0
21	Novel Geometrically Defined Mass Matrices for Tetrahedral Meshes. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	3
22	Exploiting Cyclic Symmetry in Stream Function-Based Boundary Integral Formulations. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	2
23	Fake Conductivity or Cohomology: Which to Use When Solving Eddy Current Problems With h-Formulations?. IEEE Transactions on Magnetics, 2019, 55, 1-4.	2.1	0
24	Novel sensor to measure the volume of growth for in vitro bioassays. , 2019, , .		0
25	Estimating the Volume of Unknown Inclusions in an Electrically Conducting Body with Voltage Measurements. Sensors, 2019, 19, 637.	3.8	3
26	A Fast and Efficient Simulation Method for Inductive Position Sensors Design. , 2019, , .		10
27	Optimization of RFX-mod2 gap configuration by estimating the magnetic error fields due to the passive structure currents. Fusion Engineering and Design, 2019, 146, 680-683.	1.9	3
28	A new method for accurate platelet thrombi volume measurement using a confocal microscope. Acta IMEKO (2012), 2019, 8, 48.	0.7	0
29	Goal-Oriented Adaptivity for Voltage Breakdown Prediction. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	2
30	Numerical–Experimental Benchmarking of a Probabilistic Code for Prediction of Voltage Holding in High Vacuum. IEEE Transactions on Plasma Science, 2018, 46, 1580-1586.	1.3	11
31	Coupling Volume and Surface Integral Formulations for Eddy-Current Problems on General Meshes. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	3
32	Efficient construction of 2-chains representing a basis of H2(Î©Â¯,â‚Î©;â„¤$H_{2}(overline {Omega }, partial) Tj ETQq0 0 0 rgBT /Overl	1.6	0
33	Lean Cohomology Computation for Electromagnetic Modeling. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	2
34	<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" id="M1"><mml:mrow><mml:mi>T</mml:mi></mml:mrow></mml:math>-<mml:math xmlns:mml="http://www.w3.org/1998/Math/MathML" id="M2"><mml:mrow><mml:mi>Î©</mml:mi></mml:mrow></mml:math> Formulation with Higher-Order Hierarchical Basis Functions for Nonsimply Connected Conductors. Mathematical Problems in Engineering, 2018, 2018, 1-8.	1.1	0
35	Novel FDTD Technique Over Tetrahedral Grids for Conductive Media. IEEE Transactions on Antennas and Propagation, 2018, 66, 5387-5396.	5.1	8
36	GPU Accelerated Time-Domain Discrete Geometric Approach Method for Maxwell's Equations on Tetrahedral Grids. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	6

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37	Iterative Solution of Eddy Current Problems on Polyhedral Meshes. IEEE Transactions on Magnetics, 2018, 54, 1-4.	2.1	3
38	T – Ω Formulation for Eddy-Current Problems with Periodic Boundary Conditions. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	8
39	A Volume Integral Formulation for Solving Eddy Current Problems on Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	23
40	An Arbitrary-Order Discontinuous Skeletal Method for Solving Electrostatics on General Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	3
41	Topoprocessor: An Efficient Computational Topology Toolbox for <italic>h</italic>-Oriented Eddy Current Formulations. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	2
42	A Geometric Frequency-Domain Wave Propagation Formulation for Fast Convergence of Iterative Solvers. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	1
43	Adaptivity Based on the Constitutive Error for the Maxwellâ€™s Eigenvalue Problem on Polyhedral Meshes. IEEE Transactions on Magnetics, 2017, 53, 1-4.	2.1	2
44	3D electromagnetic analysis of the MHD control system in RFX-mod upgrade. Fusion Engineering and Design, 2017, 123, 612-615.	1.9	1
45	Efficient Construction of 2-Chains with a Prescribed Boundary. SIAM Journal on Numerical Analysis, 2017, 55, 1159-1187.	2.3	4
46	Improved surface-roughness scattering and mobility models for multi-gate FETs with arbitrary cross-section and biasing scheme. Journal of Applied Physics, 2017, 121, .	2.5	9
47	Modeling of the magnetic field errors of RFX-mod upgrade. Fusion Engineering and Design, 2017, 123, 518-521.	1.9	8
48	Prediction of lightning impulse voltage induced breakdown in vacuum interrupters. IEEE Transactions on Dielectrics and Electrical Insulation, 2017, 24, 3367-3373.	2.9	3
49	Impedance biosensor for real-time monitoring and prediction of thrombotic individual profile in flowing blood. PLoS ONE, 2017, 12, e0184941.	2.5	7
50	Geometrically defined basis functions for polyhedral elements with applications to computational electromagnetics. ESAIM: Mathematical Modelling and Numerical Analysis, 2016, 50, 677-698.	1.9	3
51	A geometric frequency-domain wave propagation formulation for fast convergence of iterative solvers. , 2016, , .		0
52	Adaptivity based on the constitutive error for the Maxwell's eigenvalue problem on polyhedral meshes. , 2016, , .		0
53	A volume integral formulation for solving eddy current problems on polyhedral meshes. , 2016, , .		1
54	Modeling of Anechoic Chambers With Equivalent Materials and Equivalent Sources. IEEE Transactions on Electromagnetic Compatibility, 2016, 58, 956-963.	2.2	1

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55	An arbitrary-order discontinuous skeletal method for solving electrostatics on general polyhedral meshes. , 2016, , .		0
56	T-Î© formulation for eddy current problems with periodic boundary conditions. , 2016, , .		1
57	An a posteriori-driven adaptive Mixed High-Order method with application to electrostatics. Journal of Computational Physics, 2016, 326, 35-55.	3.8	23
58	T-Î© formulation with higher order hierarchical basis functions for non simply connected conductors. , 2016, , .		0
59	Topoprocessor: An efficient computational topology toolbox for h-oriented eddy current formulations. , 2016, , .		0
60	A comparative performance analysis of time-domain formulations for wave propagation problems. , 2016, , .		0
61	Computation of Relative 1-Cohomology Generators From a 1-Homology Basis for Eddy Currents Boundary Integral Formulations. IEEE Transactions on Magnetics, 2016, 52, 1-6.	2.1	3
62	Sparsification of BEM Matrices for Large-Scale Eddy Current Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	14
63	Fast Frequency and Material Properties Sweeps for Quasi-Static Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	0
64	Complementary Discrete Geometric <inline-formula> <tex-math notation="LaTeX">h </tex-math> </inline-formula>-Field Formulation for Wave Propagation Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
65	Lean Complementarity for Poisson Problems. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
66	Excitation by Scattering/Total Field Decomposition and Uniaxial PML in the Geometric Formulation. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	2
67	A Boundary Integral Method for Computing Eddy Currents in Non-Manifold Thin Conductors. IEEE Transactions on Magnetics, 2016, 52, 1-4.	2.1	1
68	Uncertainty model of electro-optical thrombus growth estimation for early risk detection. Measurement: Journal of the International Measurement Confederation, 2016, 79, 260-266.	5.0	5
69	Three-dimensional analysis of JT-60SA conducting structures in view of RWM control. Fusion Engineering and Design, 2015, 96-97, 659-663.	1.9	5
70	A boundary element method for eddy-current problems in fusion devices. Fusion Engineering and Design, 2015, 96-97, 620-623.	1.9	2
71	Fast Computation of Cuts With Reduced Support by Solving Maximum Circulation Problems. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	2
72	Diagonal Discrete Hodge Operators for Simplicial Meshes Using the Signed Dual Complex. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	7

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73	A Boundary Integral Method for Computing Eddy Currents in Thin Conductors of Arbitrary Topology. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	21
74	Advanced Computational Tools for the Characterization of the Dynamic Response of MHD Control Systems in Large Fusion Devices. IEEE Transactions on Magnetics, 2015, 51, 1-5.	2.1	3
75	One Stroke Complementarity for Poisson-Like Problems. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	12
76	Plane Wave Excitation for Frequency Domain Electromagnetic Problems by Means of Impedance Boundary Condition. IEEE Transactions on Magnetics, 2015, 51, 1-4.	2.1	7
77	A novel approach for solving three dimensional eddy current problems in fusion devices. Fusion Engineering and Design, 2015, 96-97, 703-706.	1.9	3
78	Extraction of VLSI Multiconductor Transmission Line Parameters by Complementarity. IEEE Transactions on Very Large Scale Integration (VLSI) Systems, 2014, 22, 146-154.	3.1	22
79	Discrete geometric approach for modelling quantization effects in nanoscale electron devices. Journal of Computational Electronics, 2014, 13, 287-299.	2.5	5
80	Calculation of 3-D Magnetic Fields Produced by MHD Active Control Systems in Fusion Devices. IEEE Transactions on Magnetics, 2014, 50, 45-48.	2.1	11
81	A Novel Tool for Breakdown Probability Predictions on Multi-Electrode Multi-Voltage Systems. IEEE Transactions on Magnetics, 2014, 50, 93-96.	2.1	3
82	Discrete Geometric Approach for the Three-Dimensional Schrödinger Problem and Comparison With Finite Elements. IEEE Transactions on Magnetics, 2014, 50, 189-192.	2.1	0
83	Lazy Cohomology Generators Enable the Use of Complementarity for Computing Halo Current Resistive Distribution in Fusion Reactors. IEEE Transactions on Magnetics, 2014, 50, 489-492.	2.1	2
84	Lazy Cohomology Generators: A Breakthrough in (Co)homology Computations for CEM. IEEE Transactions on Magnetics, 2014, 50, 577-580.	2.1	18
85	A Novel Inversion Technique for Imaging Thrombus Volume in Microchannels Fusing Optical and Impedance Data. IEEE Transactions on Magnetics, 2014, 50, 1021-1024.	2.1	6
86	Topology Preserving Thinning of Cell Complexes. IEEE Transactions on Image Processing, 2014, 23, 4486-4495.	9.8	8
87	A novel apparatus for the volume estimation of in vitro thrombus growth. , 2014, , .		1
88	Computation of stationary 3D halo currents in fusion devices with accuracy control. Journal of Computational Physics, 2014, 273, 100-117.	3.8	12
89	A discrete geometric formulation for eddy-current problems in fusion devices. Journal of Physics: Conference Series, 2014, 490, 012077.	0.4	1
90	Numerical modelling of electromagnetic loads on fusion device structures. Journal of Physics: Conference Series, 2014, 490, 012078.	0.4	2

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91	Optimal Cohomology Generators for 2-D Eddy-Current Problems in Linear Time. IEEE Transactions on Magnetics, 2013, 49, 1299-1304.	2.1	4
92	Physics inspired algorithms for (co)homology computations of three-dimensional combinatorial manifolds with boundary. Computer Physics Communications, 2013, 184, 2257-2266.	7.5	31
93	Voltage holding optimization of the MITICA electrostatic accelerator. Fusion Engineering and Design, 2013, 88, 1038-1041.	1.9	12
94	Numerical modeling of 3D halo current path in ITER structures. Fusion Engineering and Design, 2013, 88, 529-532.	1.9	7
95	A novel technique for cohomology computations in engineering practice. Computer Methods in Applied Mechanics and Engineering, 2013, 253, 530-542.	6.6	8
96	Ex vivo Time Evolution of Thrombus Growth through Optical and Electrical Impedance data fusion. Journal of Physics: Conference Series, 2013, 459, 012016.	0.4	4
97	Combined Electro-Optical Imaging for the Time Evolution of White Thrombus Growth in Artificial Capillaries. IEEE Transactions on Instrumentation and Measurement, 2013, 62, 2954-2959.	4.7	6
98	Cohomology in 3D Magneto-Quasistatics Modeling. Communications in Computational Physics, 2013, 14, 48-76.	1.7	21
99	Electrical Impedance Spectroscopy on flowing blood to predict white thrombus formation in artificial microchannels. , 2012, , .		10
100	Discrete Geometric Formulation of Admittance Boundary Conditions for Frequency Domain Problems Over Tetrahedral Dual Grids. IEEE Transactions on Antennas and Propagation, 2012, 60, 3998-4002.	5.1	9
101	A Discrete Geometric Approach to Cell Membrane and Electrode Contact Impedance Modeling. IEEE Transactions on Biomedical Engineering, 2012, 59, 2619-2627.	4.2	9
102	Modeling Current Density Distribution Inside Proton-Exchange Membrane Fuel Cells. IEEE Transactions on Magnetics, 2012, 48, 699-702.	2.1	2
103	Comparison Between Pseudospectral and Discrete Geometric Methods for Modeling Quantization Effects in Nanoscale Electron Devices. IEEE Transactions on Magnetics, 2012, 48, 203-206.	2.1	7
104	Measurement bench for Impedance Tomography during hemostasis process in whole blood. , 2011, , .		8
105	Complementary geometric formulations for electrostatics. International Journal for Numerical Methods in Engineering, 2011, 86, 1041-1068.	2.8	22
106	A discrete geometric approach to solving time independent Schrödinger equation. Journal of Computational Physics, 2011, 230, 1370-1381.	3.8	7
107	Efficient generalized source field computation for h-oriented magnetostatic formulations. EPJ Applied Physics, 2011, 53, 20801.	0.7	13
108	A non‐destructive testing application solved with A–$\ddot{I}$ geometric eddy‐current formulation. COMPEL - the International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 2010, 29, 1606-1615.	0.9	0

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109	A perturbation method for the <i>A</i>-<i>Ï‡</i> geometric eddy-current formulation. EPJ Applied Physics, 2010, 52, 23309.	0.7	0
110	A new set of basis functions for the discrete geometric approach. Journal of Computational Physics, 2010, 229, 7401-7410.	3.8	61
111	Voltage and Current Sources for Massive Conductors Suitable With the $A\{hbox\{-\}\}chi$ Geometric Eddy-Current Formulation. IEEE Transactions on Magnetics, 2010, 46, 3069-3072.	2.1	6
112	Constitutive Relations for Discrete Geometric Approach Over Hexahedral Grids. IEEE Transactions on Magnetics, 2010, 46, 3077-3080.	2.1	3
113	A Perturbation Method for the $T-Omega$ Geometric Eddy-Current Formulation. IEEE Transactions on Magnetics, 2010, 46, 3045-3048.	2.1	3
114	A Discrete Geometric Approach to Solving 2-D Non-Linear Magnetostatic Problems. IEEE Transactions on Magnetics, 2010, 46, 3049-3052.	2.1	3
115	Time-Domain Geometric Eddy-Current A Formulation for Hexahedral Grids. IEEE Transactions on Magnetics, 2010, 46, 3301-3304.	2.1	3
116	A geometric integral formulation for eddyâ€currents. International Journal for Numerical Methods in Engineering, 2010, 82, 1720-1736.	2.8	7
117	Critical Analysis of the Spanning Tree Techniques. SIAM Journal on Numerical Analysis, 2010, 48, 1601-1624.	2.3	17
118	The discrete geometric approach for wave propagation problems. , 2009, , .		2
119	Electroquasistatic Analysis of the Gas Insulated Line for the ITER Neutral Beam Injector. IEEE Transactions on Magnetics, 2009, 45, 996-999.	2.1	15
120	Subgridding to Solving Magnetostatics Within Discrete Geometric Approach. IEEE Transactions on Magnetics, 2009, 45, 1024-1027.	2.1	3
121	Design Optimization of Waveguide Bends in Photonic Crystals. IEEE Transactions on Magnetics, 2009, 45, 1630-1633.	2.1	9
122	Base functions and discrete constitutive relations for staggered polyhedral grids. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 1117-1123.	6.6	26
123	Automatic generation of cuts on large-sized meshes for the Tâ€"Î© geometric eddy-current formulation. Computer Methods in Applied Mechanics and Engineering, 2009, 198, 3765-3781.	6.6	29
124	Modeling of epoxy resin spacers for the 1 MV DC gas insulated line of ITER neutral beam injector system. IEEE Transactions on Dielectrics and Electrical Insulation, 2009, 16, 77-87.	2.9	82
125	Advanced geometric formulations for the design of a long defects detection system. Nondestructive Testing and Evaluation, 2009, 24, 195-207.	2.1	3
126	Geometric <i>T</i>â€"Î© approach to solve eddy currents coupled to electric circuits. International Journal for Numerical Methods in Engineering, 2008, 74, 101-115.	2.8	15

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127	Constitutive Matrices Using Hexahedra in a Discrete Approach for Eddy Currents. IEEE Transactions on Magnetics, 2008, 44, 694-697.	2.1	7
128	Reinterpretation of the Nodal Force Method Within Discrete Geometric Approaches. IEEE Transactions on Magnetics, 2008, 44, 690-693.	2.1	5
129	Static Behavior Prediction of Microelectrostatic Actuators by Discrete Geometric Approaches. IEEE Transactions on Magnetics, 2008, 44, 1606-1609.	2.1	8
130	Eddy-Currents Computation With T-$Omega$ Discrete Geometric Formulation for an NDE Problem. IEEE Transactions on Magnetics, 2008, 44, 698-701.	2.1	5
131	Multi-frequency identification of defects in conducting media. Inverse Problems, 2008, 24, 035011.	2.0	20
132	Symmetric Positive-Definite Constitutive Matrices for Discrete Eddy-Current Problems. IEEE Transactions on Magnetics, 2007, 43, 510-515.	2.1	41
133	The insulation structure of the 1MV transmission line for the ITER neutral beam injector. Fusion Engineering and Design, 2007, 82, 836-844.	1.9	13
134	Image Reconstruction of Defects in Metallic Plates Using a Multifrequency Detector System and a Discrete Geometric Approach. IEEE Transactions on Magnetics, 2007, 43, 1857-1860.	2.1	15
135	Voltage sources in a â~Ï‡discrete geometric approach to eddy-currents. EPJ Applied Physics, 2006, 33, 97-101.	0.7	1
136	A /spl theta/-method for eddy currents in time-domain with a discrete geometric approach. IEEE Transactions on Magnetics, 2006, 42, 779-782.	2.1	4
137	Coupling between circuits and a-/spl chi/ discrete geometric approach. IEEE Transactions on Magnetics, 2006, 42, 1043-1046.	2.1	6
138	A geometric approach for wave propagation in 2-D photonic crystals in the frequency domain. IEEE Transactions on Magnetics, 2006, 42, 827-830.	2.1	1
139	Analysis methodologies and experimental benchmarks for eddy current testing. IEEE Transactions on Magnetics, 2005, 41, 1380-1383.	2.1	9
140	Discrete constitutive equations in A-/spl chi/ geometric eddy-current formulation. IEEE Transactions on Magnetics, 2005, 41, 1259-1263.	2.1	36
141	Image Reconstruction of Defects in Metallic Plates Using a Multi-Frequency Detector System and a Discrete Geometric Approach. , 0, , .		0
142	Constitutive matrices using hexahedra in a discrete approach for eddy currents. , 0, , .		2
143	Feasibility Studies for the Detection of Long Defects in Hot Rods. , 0, , .		1